

ABSTRACT OF THE DISCLOSURE

An associative search engine (ASE) including: (a) a search engine manager (SEM), disposed within a chip, including: (i) processing logic; (b) an external memory system, disposed outside of the chip, including: (i) a plurality of memory storage units, each memory storage unit of the memory storage units having at least a first array for storing a plurality of key entries; (c) at least a second array for storing a plurality of associated data entries, the data entries being associated with the key entries, and (d) an interface for data interfacing between the external memory system and the SEM, wherein the processing logic is designed and configured to search within each of the memory storage units, in response to an input key, so as to determine if the input key matches a particular key entry, and wherein the key entries are stored in the memory storage units as logical two-dimensional arrays (TDAs) arranged for a search tree having a plurality of levels, so as to provide an increased rate of the data retrieval from the external memory system to the processing logic.